ALACE Drifters and the Global Cellular Network

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LONG-TERM GOAL

The long-term goal of this project is to design, build, and test a PALACE float that can use the Iridium global cellular network for communication.

OBJECTIVES

PALACE floats have been used in recent years to study the upper ocean circulation throughout the world ocean, and there are future plans for several large experiments using these floats. At present these instruments communicate using the ARGOS system. However, this system is very slow (data transfer rates of only a few bits per second), and only one-way communication is possible. The Iridium system promises much faster (2400 bps, or possibly higher) communication, and the objective of this work is to build a prototype PALACE float capable of taking advantage of the Iridium system.

APPROACH

It is planned to build one or two floats that employ a prototype controller and communications module capable of using Iridium. In order to do this, the present controller needs to be completely redesigned, new antennas must be chosen, and software must be written.

WORK COMPLETED

The Iridium system came on line on 1 November 1998 and is still not fully functional. The present plans of the company call for the system to be fully functional by 1 April 1999. We have been designated as an official “beta test” site by Iridium an will shortly receive a free phone unit and free service on their system for about 90 days. This is necessary to evaluate the performance of their system and for us to see what is necessary to incorporate this new technology into PALACE floats. We have completed several designs for hardware and software that will control the Iridium PALACE, but we cannot begin to implement these until we are able to get on the system to begin experimentation.

RESULTS

None yet, but by mid-1999 we hope to have a functioning prototype. It is planned to deploy this prototype in the Japan Sea if it is ready in time. Otherwise, we will deploy it in the western N. Atlantic.

IMPACT/APPLICATION

PALACE floats have a good future as a tool for ocean exploration, and also in many applied areas such as ocean prediction. The instrument planned here will greatly improve our ability to carry out these tasks.

TRANSITIONS

None yet.

RELATED PROJECTS

I am funded by NSF to carry out a large deployment of PALACE floats in the N. Atlantic as part of the WOCE/ACCE project. Also, I will deploy PALACEs in the Japan Sea with ONR funding in 1999. Additionally, I am on the ARGO Science Team, a group formed to plan the deployment of about 3000 PALACE floats over the globe beginning in 2000. Using Iridium technology instead of ARGOS would be useful in all of these efforts.